Amendments to the Claims:

Claims 1-29 are pending in this examination. Please amend claims 1, 18, and 25 as follows:

1. (currently amended) A system for preventing acoustic shock comprising:

a variable attenuator attenuating an input signal by a variable attenuation amount specified in a single attenuation value signal to produce an output signal;

a frequency analyzer operative to convert a time-windowed portion of the input signal into a plurality of frequency bins, each frequency bin expressing the energy of the time-windowed portion of the input signal over a particular frequency range;

an energy calculator which determines a relative energy signal having an element corresponding to each frequency bin, each element of the relative energy signal based on energy magnitude in the corresponding frequency bin relative to a total energy of the time-windowed portion of the input signal;

a plurality of signal detectors, each detector in communication with the energy calculator, each signal detector generating a detection signal for modifying the variable attenuation amount based on the relative energy signal, at least one of the detection signals comprising a vector of attenuation elements, each attenuation element in the vector of attenuation elements corresponding to one of the frequency bins; and

attenuation logic in communication with the variable attenuator and the plurality of signal detectors, the attenuation logic determining an attenuation value signal controlling the variable attenuation amount based on combining the plurality of detection signals to generate the single attenuation value signal.

2. (original) The system of claim 1 wherein at least one of the signal detection signals, when asserted, inhibits attenuation by the variable attenuator.

3. (original) The system of claim 1 further comprising:

a difference calculator which calculates a difference signal based on a difference in energy between each pair of adjacent frequency bins;

a general tone detector as one of the plurality of signal detectors, the general tone detector in communication with the difference calculator, the tone detector generating a general tone detection signal based on the relative energy signal and on the difference signal.

4. (original) The system of claim 3 wherein the general tone detection signal is one of the at least one detection signal comprising a vector of attenuation elements, the general tone detector generating an assertion for each of the general tone detection signal elements if that particular element has a corresponding difference signal element exceeding a difference threshold and a corresponding relative energy signal element less than a relative energy threshold.

5. (original) The system of claim 3 further comprising a time averaging filter averaging the difference in energy between at least one of pair of adjacent frequency bins.

6. (original) The system of claim 1 wherein the plurality of signal detectors comprises a fax/modem detector generating a fax/modem detection signal based on any element in a subset of the relative energy signal exceeding a preset threshold.

7. (original) The system of claim 1 wherein the plurality of signal detectors comprises a select tone detector generating a select tone detection signal based on at least one element of the relative energy signal exceeding a preset threshold, each of the at least one relative energy signal element corresponding to a known select tone frequency.

8. (original) The system of claim 7 wherein the select tone detector selects at least one from a set including at least one dial tone and at least one ring tone.

9. (original) The system of claim 1 wherein the attenuation logic scales each attenuation element of at least one of the detection signals comprising a vector of attenuation elements.

10. (original) The system of claim 1 wherein the attenuation logic implements a spreading filter across the attenuation elements of at least one of the detection signals comprising a vector of attenuation elements.

11. (original) The system of claim 1 further comprising a noise canceller for cancelling noise in the output signal.

12. (original) The system of claim 1 further comprising a compressor for amplitude compression of the output signal.

13. (original) The system of claim 1 wherein the attenuation value signal comprises a vector of attenuation elements, each attenuation element corresponding with one of the frequency bins.

14. (original) A method of reducing acoustic shock comprising:

obtaining the spectrum of an input signal, the spectrum including a plurality of frequency bins, each bin representing the magnitude of the spectrum over a particular frequency range;

determining a relative energy signal as a plurality of relative energy elements, each relative energy element representing the relative energy in a corresponding frequency bin;

determining a difference signal as a plurality of difference elements, each difference element representing a difference between a corresponding frequency bin value and an adjacent frequency bin value;

determining a plurality of detection signals, each detection signal detecting the presence of a sound element in the input signal based on at least one of the relative energy signal and the difference signal;

combining the plurality of detection signals to produce an attenuation signal, the attenuation signal comprising an attenuation element corresponding to each frequency bin; and

attenuating the input signal using the attenuation signal.

15. (original) The method of claim 14 wherein determining a plurality of detection signals comprises determining a general tone detection signal based on the relative energy signal and the difference signal, the tone detection signal comprising a plurality of general tone detection elements, each general tone detection element corresponding to one of the frequency bins.

16. (original) The method of claim 14 wherein the value of each general tone detection element is a logical one if the corresponding difference element has a value greater than a difference threshold and if the corresponding relative energy element has a value less than a relative energy threshold.

17. (original) The method of claim 14 wherein determining a plurality of detection signals comprises determining a fax/modem detection signal based on a subset of the relative energy signal, the subset based on frequencies known to exhibit fax/modem tones.

18. (currently amended) The method of <u>claim 14</u> ~~claim 13~~ wherein determining a plurality of detection signals comprises determining a select tone

detection signal based on a subset of the relative energy signal, the subset based on frequencies known to exhibit at least one select tone.

19. (original) The method of claim 18 wherein the at least one select tone comprises a ring tone.

20. (original) The method of claim 18 wherein the at least one select tone comprises a dial tone.

21. (original) The method of claim 18 wherein combining the plurality of detection signals comprises decreasing attenuation if a select tone is detected.

22. (original) The method of claim 14 further comprising spread filtering at least one of the plurality of detection signals having a plurality of detection elements.

23. (original) The method of claim 14 further comprising cancelling noise in the attenuated input signal.

24. (original) The method of claim 14 further comprising amplitude compressing the attenuated input signal.

25. (currently amended) A method of reducing acoustic shock comprising:

obtaining the spectrum of an input signal;

determining a relative energy signal as a function of frequency based on the spectrum;

determining a difference signal based on a change in magnitude in the spectrum as a function of frequency;

determining a general tone signal as a function of the relative energy signal and the difference signal;

determining a fax/modem signal as a function of the relative energy signal;

determining a select tone signal as a function of the relative energy signal;

determining ~~an~~ a single attenuation signal as a function of frequency based on combining the general tone signal, the fax/modem signal and the select tone signal; and

attenuating a sound signal based on the attenuation signal.

26. (original) The method of claim 25 wherein the select tone signal is used to block attenuation otherwise caused by at least one of the general tone signal and the fax/modem signal.

27. (original) The method of claim 25 wherein the general tone signal increases attenuation if, for a given frequency, the difference signal is above a difference threshold.

28. (original) The method of claim 25 wherein the general tone signal increases attenuation if, for a given frequency, the relative energy signal is below a difference threshold.

29. (original) A method of preventing acoustic shock comprising:

detecting for the presence of at least one general tone;

detecting for the presence of at least one fax/modem tone;

detecting for the presence of a select tone, the select tone being at least one signal from a set including at least one dial tone and at least one ring tone; and

attenuating a sound signal if at least one of the at least one general tone is detected and the at least one fax/modem tone is detected but only if the at least one select tone is not detected.